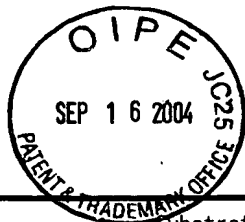
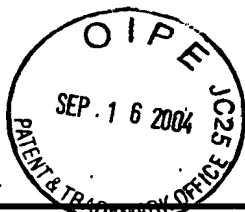


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[Claim 1]



Substrate 1	Substrate 2
<p><b>(A) a compound capable of forming a stable radical</b></p> <p>(A1) oxygen-atom-containing compounds each having a carbon-hydrogen bond at the adjacent position to an oxygen atom            (A1-1) primary or secondary alcohols,            (A1-2) ethers each having a carbon-hydrogen bond at the adjacent position to an oxygen atom            (A1-3) acetals (including hemiacetals) each having a carbon-hydrogen bond at the adjacent position to an oxygen atom</p> <p>(A2) carbonyl-group-containing compounds</p> <p>(A3) compounds each having a hydrocarbon group with a methine carbon atom            (A3-1) cyclic compounds each having a methine group            (A3-2) chain compounds each having a methine carbon atom</p>	<p><b>(B) a radical scavenging compound</b></p> <p>(B1) unsaturated compounds            (B1-1) unsaturated compounds each having an electron attracting group at the adjacent position of a carbon-carbon unsaturated bond [active olefins (electron-deficient olefins) and other active unsaturated compounds],            (B1-2) compounds each having a carbon-carbon triple bond,            (B1-3) compounds each having an aromatic ring,            (B1-4) ketenes,            (B1-5) isocyanate or thioisocyanate compounds</p> <p>(B2) compounds each having a hydrocarbon group with a methine carbon atom            =compounds (A3)</p> <p>(B3) heteroatom-containing compounds            (B3-1) compounds each having a sulfur atom,            (B3-2) compounds each having a nitrogen atom,            (B3-3) compounds each having a phosphorus atom,            (B3-4) compounds each having an oxygen atom</p>
Reaction Type	
<p>Type 1 : (A1) + (B1)</p> <p>Type 2 : (A3) + (B1)</p> <p>Type 3 : (A1) + (B2)</p> <p>Type 4 : (A3) + (B2)</p>	<p>Type 5 : (A2) + (B1)</p> <p>Type 6 : (A2) + (B2)</p> <p>Type 7 : (A2) + (B3)</p> <p>Type 8 : (A1) + (B3)</p> <p>Type 9 : (A3) + (B3)</p>
Reaction Product	
<p>(i) an addition or substitution reaction product or an oxidized product thereof, where the adjacent position to the oxygen atom of the compound (A1) is bonded to an atom (e.g., a carbon atom) constituting an unsaturated bond of the unsaturated compound (B1), to the methine carbon atom of the compound (B2) having a hydrocarbon group with a methine carbon atom, or to the heteroatom of the heteroatom-containing compound (B3) when the oxygen-atom-containing compound (A1) is employed as the compound (A) (page 48, lines 6-14).</p> <p>(ii) an addition or substitution reaction product or an oxidized product thereof, where a bond between a carbonyl group and an atom adjacent to the carbonyl group of the compound (A2) is broken, and an atomic group containing the carbonyl group (e.g., an acyl group) is bonded to the aforementioned position of the compound (B1), (B2) or (B3) when the carbonyl-group-containing compound (A2) is employed as the compound (A) (page 48, lines 15-22).</p> <p>(iii) an addition or substitution reaction product or an oxidized product thereof, where the methine carbon atom of the compound (A3) is bonded to the aforementioned position of the compound (B1), (B2) or (B3) when the compound (A3) containing a hydrocarbon group with a methine carbon atom is employed as the compound (A) (page 48, lines 22 to page 49, lines 1).</p>	



Claim No.

	Substrate		Product
2	$\begin{array}{c} \text{OH} \\   \\ \text{R}^a - \text{CH} - \text{R}^b \end{array}$ <p>(2) [A11]</p>	$\begin{array}{c} \text{R}^c \quad \text{R}^e \\ \diagdown \quad \diagup \\ \text{C} = \text{C} \\ \diagup \quad \diagdown \\ \text{R}^d \quad \text{Y} \end{array}$ <p>(3) [B11]</p>	$\begin{array}{c} \text{HO} \quad \text{R}^b \quad \text{HO} \quad \text{R}^e \\ \diagdown \quad \diagup \quad \diagdown \quad \diagup \\ \text{R}^a \quad \text{C} = \text{C} = \text{C} = \text{C} \\ \diagup \quad \diagdown \quad \diagup \quad \diagdown \\ \text{R}^c \quad \text{R}^d \quad \text{Y} \end{array}$ <p>(4) 1,3-dihydroxy compound</p> <p>addition and oxidation product</p>
3	$\begin{array}{c} \text{OH} \\   \\ \text{R}^a - \text{CH} - \text{R}^b \end{array}$ <p>(2) [A11]</p>	$\begin{array}{c} \text{R}^c \quad \text{R}^e \\ \diagdown \quad \diagup \\ \text{C} = \text{C} \\ \diagup \quad \diagdown \\ \text{R}^d \quad \text{CO}_2\text{R}^f \end{array}$ <p>(5) [B12]</p>	$\begin{array}{c} \text{O} \\    \\ \text{HO} - \text{C} - \text{O} \\   \quad   \\ \text{R}^e \quad \text{R}^a \\   \quad   \\ \text{R}^d \quad \text{R}^b \\   \quad   \\ \text{R}^c \quad \text{R}^b \end{array}$ <p>(6) <math>\alpha</math>-hydroxy-<math>\gamma</math>-butyrolactone derivative</p> <p>addition and oxidation product</p>
14	$\begin{array}{c} \text{R}^i \\   \\ \text{R}^j - \text{CH} - \text{CH}_2 - \text{OH} \end{array}$ <p>(2a) [A12]</p>	$\begin{array}{c} \text{H} \quad \text{R}^e \\ \diagdown \quad \diagup \\ \text{C} = \text{C} \\ \diagup \quad \diagdown \\ \text{R}^d \quad \text{Y} \end{array}$ <p>(3a) [B13]</p>	$\begin{array}{c} \text{R}^i \quad \text{R}^e \\ \diagdown \quad \diagup \\ \text{C} = \text{C} = \text{C} = \text{C} \\ \diagup \quad \diagdown \quad \diagup \quad \diagdown \\ \text{R}^j \quad \text{R}^d \quad \text{Y} \end{array}$ <p>(11) conjugated unsaturated compound</p> <p>addition product (accompanied with dehydration)</p>
15	$\begin{array}{c} \text{R}^k - \text{CH} \\ \diagup \quad \diagdown \\ \text{O} - \text{R}^m \quad \text{O} - \text{R}^n \end{array}$ <p>(12) [A13]</p>	$\begin{array}{c} \text{R}^c \quad \text{R}^e \\ \diagdown \quad \diagup \\ \text{C} = \text{C} \\ \diagup \quad \diagdown \\ \text{R}^d \quad \text{Y} \end{array}$ <p>(3) [B11]</p>	$\begin{array}{c} \text{R}^m \quad \text{R}^n \quad \text{HO} \quad \text{R}^e \\ \diagdown \quad \diagup \quad \diagdown \quad \diagup \\ \text{R}^k \quad \text{C} = \text{C} = \text{C} = \text{C} \\ \diagup \quad \diagdown \quad \diagup \quad \diagdown \\ \text{R}^c \quad \text{R}^d \quad \text{Y} \end{array}$ <p>(13) <math>\beta</math>-hydroxyacetal compound</p> <p>addition and oxidation product</p>
16	$\begin{array}{c} \text{R}^o \\   \\ \text{R}^p - \text{CH} \\   \\ \text{R}^q \end{array}$ <p>(14) [A31]</p>	$\begin{array}{c} \text{R}^c \quad \text{R}^e \\ \diagdown \quad \diagup \\ \text{C} = \text{C} \\ \diagup \quad \diagdown \\ \text{R}^d \quad \text{Y} \end{array}$ <p>(3) [B11]</p>	$\begin{array}{c} \text{R}^p \quad \text{R}^o \quad \text{HO} \quad \text{R}^e \\ \diagdown \quad \diagup \quad \diagdown \quad \diagup \\ \text{R}^q \quad \text{C} = \text{C} = \text{C} = \text{C} \\ \diagup \quad \diagdown \quad \diagup \quad \diagdown \\ \text{R}^c \quad \text{R}^d \quad \text{Y} \end{array}$ <p>(15) hydroxy compound</p> <p>(16)</p> <p>addition and oxidation product</p>

## CLAIMS (R1)

- Claim No.

	Substrate		Product
17	$\begin{array}{c} \text{R}^{\circ} \\   \\ \text{R}^{\text{p}}-\text{CH} \\   \\ \text{R}^{\text{q}} \end{array}$ <p>(14) [A31]</p>	$\begin{array}{c} \text{R}^{\text{c}} & & \text{H} \\ & \backslash & / \\ & \text{C} = \text{C} \\ & / & \backslash \\ \text{R}^{\text{d}} & & \text{Y} \end{array}$ <p>(3b) [B14]</p>	<p>(17) carbonyl compound</p>
	Type 2: (A3) + (B1)		addition and oxidation product
18	$\begin{array}{c} \text{R}^{\circ} \\   \\ \text{R}^{\text{p}}-\text{CH} \\   \\ \text{R}^{\text{q}} \end{array}$ <p>(14) [A31]</p>	$\begin{array}{c} & & \text{R}^{\text{e}} \\ & \backslash & / \\ \text{H} & \text{C} = \text{C} \\ & / & \backslash \\ \text{H} & & \text{Y} \end{array}$ <p>(3c) [B15]</p>	<p>(18) compound having an electron attracting group</p>
	Type 2: (A3) + (B1)		addition and oxidation product (accompanied with decarboxylation)
19	$\begin{array}{c} \text{OH} \\   \\ \text{R}^{\text{a}}-\text{CH}-\text{R}^{\text{b}} \end{array}$ <p>(2) [A11]</p>	$\begin{array}{c} \text{R}^{\circ} \\   \\ \text{R}^{\text{p}}-\text{CH} \\   \\ \text{R}^{\text{q}} \end{array}$ <p>(14) [B21]</p>	<p>(19) alcohol</p>
	Type 3: (A1) + (B2)		substitution product
20	$\begin{array}{c} \text{R}^{\circ 1} \\   \\ \text{R}^{\text{p}1}-\text{CH} \\   \\ \text{R}^{\text{q}1} \end{array}$ <p>(14a) [A32]</p>	$\begin{array}{c} \text{R}^{\circ 2} \\   \\ \text{R}^{\text{p}2}-\text{CH} \\   \\ \text{R}^{\text{q}2} \end{array}$ <p>(14b) [B22]</p>	<p>(20) coupling product</p>
	Type 4: (A3) + (B2)		substitution product